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RECREATION PLANNING AND MANAGEMENT
GUIDELINES FOR HYDROELECTRIC
AND OTHER WATER RESOURCE DEVELOPMENT

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ABSTRACT

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Title: Recreation Planning and Management Guidelines for Hydroelectric
and Other Water Resource Development

Abstract: The Forest Service is a primary outdoor recreation provider, particularly with regard to opportunities for low density recreation experiences. The Forest Service must ensure that hydroelectric developments on National Forest System lands adequately provide for the recreation demand induced by the attractions created by the hydropower and other water resource development. These attractions primarily include reservoirs and access improvements.

There are many factors to consider in recreation planning for hydropower projects and reservoirs. These factors are part of a recreation planning process that includes: assessing demand for certain types of recreation opportunities; measuring the capability of the recreation resource to provide recreation opportunities (including resources, budgets, capacities, and other uses); developing plans for management including alternatives, public involvement, and assessments of impact; implementing such plans; and monitoring and updating plans for future users.

This paper describes the Forest Service relationship with the Federal Energy Regulatory Commission (FERC) and with hydropower developers. It also discusses the differences in authorities when dealing with projects not under the jurisdiction of FERC. The paper includes an evaluation of recreation processes and guidelines for recreation planning and management in conjunction with hydropower development.

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EXECUTIVE SUMMARY

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Summary: This project is intended to provide advice to Forest Recreation Staff Officers and others on National Forests and Ranger Districts involved with planning and managing recreation developments in conjunction with hydroelectric development on National Forests; particularly those that develop reservoirs. It also covers non-reservoir recreation needs and recreation planning with non-hydroelectric reservoirs.

This paper was prepared using the information and background gained at the Clemson Recreation management Short Course in 1985 and experience gained as a Staff Officer on the Eldorado National Forest in California which had a number of large hydropower developments. The next step was to research the literature on recreation planning and the literature on recreation at reservoirs and lakes. From that research, the review in Appendix A was developed. Using that review and personal experience, the guidelines were developed.

The Forest Service is a primary outdoor recreation provider, particularly with regard to opportunities for low density recreation experiences. The Forest Service must ensure that water resource developments on National Forest System lands adequately provide for recreation demand induced by the attractions they create. These attractions primarily include reservoirs and access improvements. In addition, the Forest Service should ensure that recreation uses displaced by water resource projects are mitigated.

The Forest Service has authority under the Federal Power Act and Federal Land Policy and Management Act to require developers to provide recreation development to accommodate project-induced recreation demand. It also has the authority, in most cases, to require that developers replace recreation facilities displaced by a hydroelectric development. Other recreation facilities to enhance the recreation opportunities can be negotiated with the developer or required of the developer by the Federal Energy Regulatory Commission (FERC), as appropriate.

We should make actual measurement of the demand for certain types of recreation opportunities. There are demands for many types of opportunities and many factors which affect the public's demand for recreation use of the National Forest. Origin factors affect the desire for recreation, linkage factors affect the ease with which the desire can be met, and destination factors affect the choice of sites to recreate.

The two areas of recreation planning most difficult to measure and therefore, most often neglected are demand and carrying capacity. The motivation factors which affect choice are often misunderstood and this leads to mistakes in estimating actual demand. Even if these mistakes are not made, there is great difficulty in projecting demand into the future; therefore, developments have to allow for new facilities and adjustments in the future.

The Forest Service can provide for a wide variety of outdoor recreation opportunities, but should not try to provide opportunities beyond the social and biological carrying capacity of the area.

The recreation opportunity spectrum (ROS) is a useful tool in allocating the available recreation resource. The ROS classes may need adjustment in light of the hydropower facilities developed. Recreation planning at reservoirs should consider the ROS classes of the area and maintain a wide variety of recreation opportunities.

Future research that would be useful, would improve our understanding of social forces in recreation so that those relationships could be simplified to enhance planning.

INTRODUCTION

According to Funk and Wagnall's Dictionary, recreation is "1. refreshment of body or mind; diversion; amusement. 2. Any pleasurable exercise or occupation". If you notice the reference to "pleasurable ... occupation" in the second definition, you will gain an understanding of why we are paid so little for what we do and why we get so many volunteers working for the National Forests.

Your mind determines what you personally perceive as refreshment, diversion, amusement, or pleasurable. Therefore, it can be different for any person you meet. What recreation "is" cannot be determined for all people by a land manager trying to provide it for the public. While views may be similar for some people regarding preferred recreation experiences, no two people have the same desires for recreation or derive identical outcomes from a recreation experience. This is hard to understand for a land manager who is accustomed to working with 'hard' sciences (forestry, engineering, etc.) where you can get a handle on the facts. Handles on recreation can be broken the moment the public receives a new experience or new information applicable to recreation.

National Forest resources attract people seeking recreation experiences. In the early days, the Forest Service observed this use and not only decided that it was the Forest Service's responsibility to accommodate but, in many places, to encourage it. Thereby, the Forest Service became a recreation provider by delivering opportunities to individuals in society. Those opportunities include settings for activities, experiences, and social interactions.

We must, therefore, strive to understand our limitations and provide opportunities for a variety of experiences, many of which we will never know happen; nevertheless, those experiences can be of great benefit to the individual and, therefore, to society.

Background in recreation planning through a Literature Review is contained in Appendix A.

Because of the attraction that lakes and reservoirs create for recreation, they become focal points for many of the recreation opportunities the Forest Service provides. However, the Forest Service lacks detailed guidance regarding how it relates to other Federal Agencies that construct reservoirs on National Forest System lands and the Federal Energy Regulatory Commission, who licenses non-federal reservoirs constructed for the generation of hydroelectric power.

The following is proposed as guidance regarding recreation planning for reservoirs, with particular emphasis on the Forest Service's relationship with FERC and other Federal Agencies.

RECREATION PLANNING AT HYDROPOWER DEVELOPMENTS

PLANNING STEPS

The following steps lead to a useful process of planning for recreation needs at hydropower projects, particularly those that construct reservoirs.

Need Determination

1. Survey the potential users to find somewhat homogenous groups in terms of views, backgrounds, socioeconomic status, and needs.
2. Estimate the populations in those groups and from that, the populations of potential users.
3. Assess the psychological needs of the groups identified above and estimate the type and amount of various opportunities and experiences that would satisfy those needs. Be aware of the potential for latent demand for recreation opportunities that are not available or known at this time. Be aware that vocal special interest groups may not reflect the actual demand from the public, just one segment of it. Be aware of your own biases and limitations; you can only effectively represent yourself if you do not find out what the needs of others are.
4. Measure the existing use at facilities and estimate the amount of non-facility use in and around the planning area. Apply the use-demand data to the need data previously collected and determine what additional needs should be met on National Forest lands. Remember that measurements of use are not necessarily measures of need, nor are they measures of capacity; however, lacking more refined data regarding actual needs, use data has definite value. If use data is the primary data source, be aware of the short-coming of your data; the fact that future use may not follow your estimates; and that some needs exist that may not be provided.
5. Determine if current recreation uses and/or recreation sites will be displaced by the proposed project development. Determine whether such recreation facilities were constructed before or after the area was withdrawn for power purposes.
6. Estimate the potential for recreation use that may be attracted by the presence of a reservoir; attracted by improved access; attracted by access in the winter; attracted by downstream streamflow augmentation during the recreation season; and/or attracted by other aspects of the project. This is project induced recreation demand.

Capability Assessment

7. Obtain or develop the recreation opportunity spectrum (ROS) classes for the areas affected by the project.
8. Specifically assess the area as it will be after the project is developed to determine potential sites for various recreation opportunities, both developed and undeveloped.

9. Estimate area capacity, both environmentally and socially, and set upper limits of use and express this limit as "persons at one time" (PAOT). Temper this PAOT limit with the needs of the ROS class you are trying to maintain. Health and safety factors of the carrying capacity should not be overlooked; what kind of water supply and sanitation facilities are feasible; are there safety hazards. Do not abuse the carrying capacity of an area in the hopes of meeting all the demand from the public.

10. Develop alternatives for recreation facility development and for non-facility opportunities in the area to satisfy those needs to the extent appropriate for the area in question with particular regard for the additional attractions that the project will create.

11. Analyze the alternatives. Estimate the environmental affects and the extent to which each will satisfy the identified needs. Determine the value of the recreation opportunities, noting that opportunities that are more rare are generally more valuable (supply and demand).

Decision and Implementation

12. Select the preferred alternative. In the decision, recognize that demand will change in the future and be aware of the short-comings of your data; provide a mechanism to trigger future developments as demand grows or changes (normally, triggered development is preferable to inflexible staged development). In addition, consider the following:

(a) Provide to the extent possible, for settings for opportunities, activities, and experiences that can be used in a number of ways, many of which we may not now be aware of.

(b) Provide for the developer to replace facilities and accommodate uses that are displaced by the construction of the water resource project.

(c) Provide for the project-induced uses so that the area can handle the new project-induced demand.

(d) Because of the nature of the hydropower developments, the need for developed and semi-developed uses will increase and will need to be accommodated.

(e) The demands for non-developed uses may be facilitated by minor adjustments to the project (roads and trailhead parking, for example).

(f) Non-project uses must be accommodated by the project if the project induces more use of these non-project attractions by things such as access improvements.

13. Implement the decision. Require the developer to build the facilities to accommodate project induced use through section 4(e) clauses in the license. Negotiate with the developer to provide appropriate recreation enhancements. Incorporate those agreed-to enhancements into the license by using 4(e) clauses. If the developer will not provide enhancements that you consider reasonable and appropriate, you may request FERC to require them.

14. Monitor construction by the developer to ensure that it is environmentally sound and that it provides the planned development. Use the special-use permit to handle project details such as compliance with the site plan and environmental mitigation.

Follow-up

15. Monitor use and demand related to the hydropower project. Check for environmental damage from overuse or other causes. Survey crowding conditions and perceptions. Adjust PAOT, use patterns, and other manageable factors as necessary.

16. Implement new stages called for in the license when those stages are triggered. Have the developer adjust facilities, consistent with the requirements of the license to accommodate the additional or modified uses that the project is inducing. This is accomplished by ensuring that the license conditions are flexible enough to allow modification as necessary, while assuring the developer, at the time of licensing, of a known, bottom-line cost.

DATA COLLECTION CONSIDERATIONS

The data required to accurately assess demand may be very costly, particularly for a small project development. In that case, hopefully, data will exist from forest planning that will indicate needs. That data can be reinforced by use data in the area, particularly use data for developments that are similar to what is proposed at the site in question. In decision making, be aware of the accuracy of the data in terms of sample size, how current, methods, and the questions asked. Did you measure the right factors; did you ask the right questions; are you interpreting the answers correctly?

PLANNING FOR FUTURE NEEDS

Planning for future needs is difficult in any area; it is particularly difficult in recreation planning since demand is dependent on so many factors. For this reason make sure that the license conditions you develop provide for future development and adjustment as appropriate to the situation.

Use of project recreation facilities and other areas affected by the project should be monitored regularly. The license conditions should contain some device to trigger additional development as future conditions require (no one could accurately predict needs and use 50 years in the future). Examples of triggers might include number of turn-away days, occupancy levels, waits in line, etc. That triggered additional development should be adjustable to accommodate changes from projected demand and to accommodate unanticipated demands. Generally, however, changes must be within the overall cost of the full development plan. Seek agreement with the licensee for changes. Work through FERC, if you must go outside the limits of the plan.

ALTERNATIVE FEATURES TO CONSIDER

Numerous alternatives exist for satisfying recreation demand at reservoirs. These alternative actions and facilities can be combined in various ways to best meet the public needs. Those potential alternatives and choices include the following possibilities to name a few:

1. dispersed recreation
2. developed recreation
3. group sites
4. day use sites (including picnic areas)
5. beaches
6. boat ramps
7. access
8. parking areas (including trailhead parking)
9. information stations (kiosks, information signs, hosts)
10. related facilities in the area of the reservoir
11. uses made possible by increased access, including winter access
12. downstream river floating made possible by power generation releases

POTENTIAL IMPACTS TO CONSIDER

Impacts need to be estimated in order to make an effective and responsible plan. Consider the following potential IMPACTS OF RECREATION DEVELOPMENT when evaluating hydropower developments.

1. Temporary traffic disruption during construction.
2. Affects on existing recreation use from higher use generally.
3. Resource impacts of the recreation development that affect the recreation experience.
4. Conflicting recreation uses.
5. Displacement of dispersed recreation by hardening (formalizing) dispersed sites.
6. Value conflicts caused by more public exposure to the area and the resulting concern over the management of non-recreation resources.

Consider the following potential reservoir and power development IMPACTS ON RECREATION.

1. Recreation uses and sites that are displaced by power and reservoir project facilities.
2. The attraction of the water development and other aspects of the project, and the need to accommodate it.
3. Temporary and permanent disruption of traffic during construction and from the project facilities.

4. The change from flowing water to flat water.

5. Construction worker influx and the resulting impacts on towns, schools, roads, law enforcement agencies, and Forest Service recreation facilities.

INVOLVEMENT WITH FEDERAL ENERGY REGULATORY COMMISSION (FERC)

SUMMARY OF FERC - FOREST SERVICE RELATIONSHIPS

General - The relationship between the Forest Service and the Federal Energy Regulatory Commission (FERC) is complex due to FERC and Forest Service responsibilities under the Federal Power Act. It is also affected by Forest Service responsibilities under the Federal Land Policy and Management Act and its responsibility to manage National Forest System lands. See Forest Service Manual Section 2770 and Forest Service Handbook 2709.15 for the details of Forest Service involvement in hydropower development. Here we will only highlight that relationship for the purposes of recreation management in conjunction with hydropower projects.

Federal Power Act and 4(e) - Section 4(e) of the Federal Power Act is the basis of our authority over hydropower development of National Forest System lands. Section 4(e) states in part that FERC may license projects on National Forest System land, provided that the license "shall be subject to and contain such conditions as the Secretary ... shall deem necessary for the adequate protection and utilization of such reservation." Therefore, the Forest Service may impose conditions on a license issued by FERC; however, those conditions must be reasonable and necessary for the "adequate protection and utilization" of the National Forest. This is our 4(e) authority. We use a "4(e) report" to provide FERC with our analysis of the project and the conditions we require to be included in the license.

Federal Land Policy and Management Act - Section 501(a)(4) of this act requires the developer of a hydropower project on National Forest System lands to obtain a Forest Service right-of-way (special-use permit) in addition to a license or exemption from FERC. Generally, we limit the scope of the special-use permit, as discussed later, in order to avoid confusion between the license and permit.

FERC Jurisdiction - FERC has jurisdiction over hydroelectric development on Federal lands, including National Forest System lands. This is not the limit of their jurisdiction, but all that is important for our purposes here. The Forest Service obviously has jurisdiction over the management of National Forest System lands. The confusion comes in deciding where the Forest Service authority ends and the FERC authority begins and vice versa.

FERC/FS Coordination - The roles and relationships between the agencies regarding projects seeking or holding a license is summarized as follows:

1. Since about 1980, a hydroelectric project on National Forest System lands must have both a FERC license and a Forest Service special-use authorization.
2. FERC determines whether a project is to be authorized and the Forest Service applies conditions, necessary for the protection and utilization of National Forest Service resources, to the license to be issued by FERC.

3. To avoid conflicts between the Forest Service authorization and the FERC license, the Forest Service uses the license conditions for all important conditions with economic effects, and the special-use authorization for routine control of project details primarily during construction.

4. The Forest Service may require appropriate recreation development to accommodate project-induced recreation demand and most displaced uses through the imposition of license conditions under section 4(e) of the Federal Power Act.

5. FERC may require additional recreation enhancements through their authorities.

FERC defers largely to the Forest Service to negotiate with the applicant for supplying the recreation needs related to the project. If the Forest Service and the applicant agree, generally FERC will approve it. The Forest Service can require, through section 4(e) conditions, replacement of most displaced facilities and those measures necessary for the adequate protection and utilization of National Forest resources, from impacts resulting from project-induced recreation uses. Those Forest Service requirements must be reasonable and necessary for the protection of those resources and if found to be excessive or unnecessary by the courts, would be eliminated from the license. Other measures that enhance recreation have to be imposed by FERC and may be requested by the Forest Service if the licensee will not volunteer or agree to them.

Displaced Recreation - Dispersed recreation uses that are displaced by the project should be provided for in project development. If recreation sites are involved, determine if they were constructed before the land was withdrawn for power purposes. If those facilities predate the withdrawal, the developer is obligated to replace them. If the withdrawal predates the facilities, negotiate with the developer to replace them. If negotiations with the developer fail, you may request FERC to require replacement of those facilities through their authority.

Also consider project-induced recreation needs in this process; often the use at a facility that is displaced by construction of a reservoir project can be accommodated at a facilities primarily necessary to accommodate project induced use.

Enhancements - Developers often are eager to find ways to enhance other resources in order to balance off the perception that the project is only a development for profit sake. Negotiate for enhancements to recreation with the developer. If enhancements related to the project appear to be within the economic capability of the project, you may request FERC to require them of the developer.

Project Modifications - Forest Service authority to require recreation mitigation for projects that are amendments to licenses is limited to the scope of the amendment or change. In the event that more comprehensive development is needed, the Forest Service should negotiate such additions with the applicant and may make the case for such improvements in a request to FERC, who has the authority to require such additions.

Relicensing - Forest Service authority to require recreation mitigation for projects that are applying for a new license under relicensing procedures is essentially the same as described for regular projects applying for an original license. Met and unmet needs induced by the original project are also considered induced by the project being relicensed (as though it were a new project).

Exemptions - Forest Service has independent and full authority over projects which receive an exemption from licensing. This authority is through the special-use authorization and the potential for conflicts with the FERC exemption are minimal. However, since exemptions are small and cannot develop reservoirs, the recreation needs related to the project will be minor.

FERC Recreation Plans - FERC requires that the licensees for major projects have a recreation plan and that they keep development up-to-date. FERC approves the project recreation plan after input from the Forest Service. FERC monitors construction regarding the plan, but relies on the Forest Service to watch for detailed compliance with the plan. After construction, FERC performs regular formal inspections. Problems in project operation regarding recreation may be brought to FERC's attention at this time (and at other times as appropriate). The best way to ensure that the project provides appropriate recreation development is to work with the developer.

APPLICANT/DEVELOPER RESPONSIBILITY

Hydropower licensees are required by law to provide appropriate recreation development in conjunction with their hydropower developments on Federal lands. They are directly responsible to accommodate recreation uses that are a result of the attraction they develop on National Forest System land. Such project induced needs may include:

1. Reservoirs and their attractions:
 - a. camping
 - b. boating
 - c. fishing
 - d. water skiing
 - e. sight seeing
 - f. swimming, beaches
2. Streamflow augmentation and the attractions of:
 - a. improved fishing in the lake and stream
 - b. late season and long season rafting on power releases
 - c. related camping
3. Access improvements and the attraction of:
 - a. fast and easy access to the forest and reservoir
 - b. winter access to the forest for snow play
 - c. better access to non-project attractions

The applicant/licensee is responsible for mitigation for such things as:

1. Displaced sites (evaluate the effects of a power withdrawal)
2. Displaced uses
3. Fisheries and stream changes
4. Visual quality of:
 - a. project structures (pipelines, buildings, transmission lines, etc.)
 - b. reservoir drawdown
 - c. view points
5. Access mitigation (traffic disruption - temporary and permanent)

The applicant/licensee may be able to provide enhancements such as:

1. Recreation sites
2. Water development
3. Improved roads and trails
4. Streamflow and stream enhancements
5. Off-site water development
6. Parking and trailhead sites
7. Interpretative sites and services

The applicant is financially responsible for providing recreation relating to the project on National Forest System lands, including the information necessary for the Forest Service to reasonably assess the needs, alternatives, and impacts of the proposed development, including recreation. For example the applicant is responsible for:

1. Surveys (land and needs)
2. Planning information and cooperation
3. Design
4. Construction
5. Operation
6. Maintenance
7. Replacement of worn-out recreation facilities
8. Providing for displaced recreation
9. Keeping facilities up-to-date with demand

In this process, the Forest Service performs an independent evaluation of the impacts under the National Environmental Policy Act. The Forest Service cooperates with the applicant and FERC to ensure an acceptable project is designed, if possible.

JOINT FOREST SERVICE / LICENSEE RESPONSIBILITY

There should be a Forest Service presence at recreation developments on National Forest System lands, even if those facilities were not constructed by the Forest Service. For this reason, it may be desirable for the Forest Service to perform some of the actions that are the licensee's responsibility. If such agreements with the developer are worked out, ensure that the agreement does not put the applicant's financial responsibilities upon the Forest Service.

The Forest Service and licensee can enter into collection agreements wherein the licensee pays the Forest Service expenses for performing portions of the planning, construction, operation, maintenance, and replacement.

Questions to be answered are, in part:

1. Who owns the facilities?
2. Who operates the facilities?
3. Who collects the fees?
4. How will the licensee be credited for fees, if collected by the Forest Service?
 - a. 100%
 - b. 75% (collections sent to the treasury less the County's 25%)
 - c. 65% (less the County's 25% and Forest Road and Trails 10%)
 - d. 0%

Remember that fee collection should not transfer ultimate responsibility from the licensee to the Forest Service and that the fees collected by the Forest Service are given to the treasury. The next year's funds are appropriated by Congress without direct regard to collections.

Regardless of who owns or operates the recreation facilities, the Forest Service and licensee must be given appropriate credit in signing the recreation facilities if National Forest System lands are used.

DECISION PROCESS SUMMARY

See Figure 1 for a summary decision flow chart to aid in evaluating the options involved in providing for recreation at hydropower projects. The following narrative discussion details the steps shown in the figure.

1. The applicant (developer) begins the process in a staged consultation procedure required by FERC. During this process the following considerations apply to recreation. The applicant prompts the official response and analysis of the project proposal by FERC and the Forest Service by making application for license to FERC and application for special use authorization to the Forest Service. See Forest Service Handbook (FSH) 2709.15 chapter 10.
2. Throughout the process the Forest Service analyzes the project to assist the developer design a project that might become an acceptable use of the National Forest. See FSH 2709.15 chapters 20 and 30.
3. One of the steps in the analysis is to determine if recreation uses or needs are affected by the project. If there are effects they are evaluated as shown.
4. If recreation is not affected, the project is analyzed and a 4(e) report prepared (FSH 2709.15 chapter 50). If recreation is involved, the recreation analysis is added to the overall project analysis and the 4(e) report is prepared.
5. Existing recreation sites and other uses might be adversely affected (displaced) by the development of the hydropower project. If so, the analysis shown in column A of Figure 1 should be considered. There are likely other recreation needs in the area; if so consider the analysis shown in column B.

EVALUATION / DECISION TABLE FOR RECREATION CHOICES AT HYDROPOWER PROJECTS

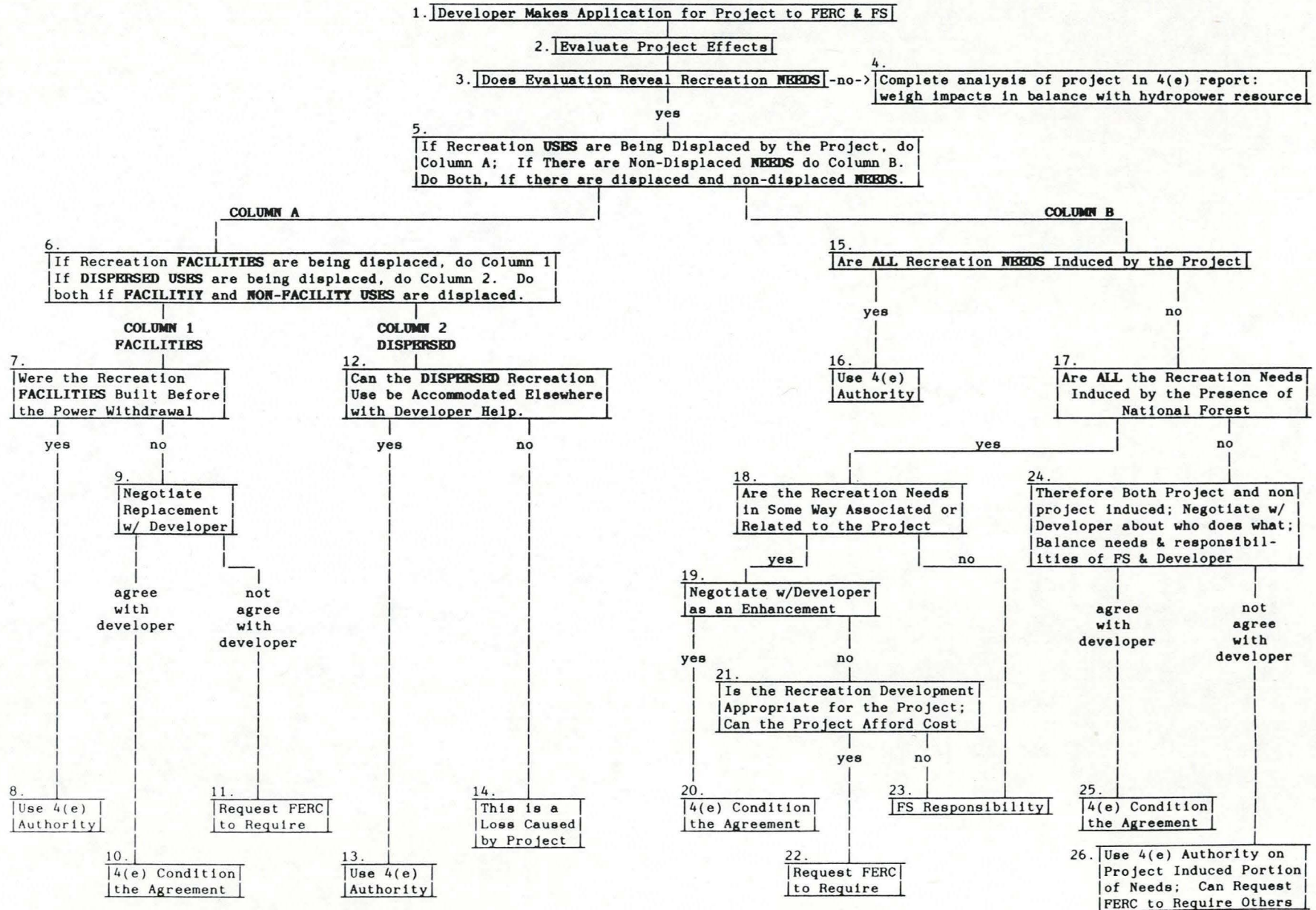


FIGURE 1 - HYDROPOWER/RECREATION DECISION FLOW CHART

6. For developed recreation sites (campgrounds etc.) that are displaced by the project consider the steps of column 1. For dispersed recreation uses that are displaced by the project consider the steps of column 2.
7. Determine if the recreation facilities were constructed before the date of the withdrawal for power purposes by checking the land status maps. If there is no withdrawal shown on the map, it is likely that the application for preliminary permit or license by the developer to FERC is the first withdrawal of the site, so the recreation facilities likely predate the withdrawal for power purposes.
8. If the facilities predate the withdrawal, then our 4(e) authority applies. After analysis of the entire recreation situation and after discussions with the developer and other interested agencies and parties, provide FERC with a license (4(e)) condition that requires appropriate replacement of the displaced facility. This is usually done in relation to the recreation plan that the developer is to prepare as part of its license application.
9. If the withdrawal predates the recreation facilities then our section 4(e) authority does not apply. Therefore, negotiate with the developer to have the developer provide replacement of those facilities.
10. If the developer agrees to replace the facilities, then secure the agreement by making its provisions a 4(e) condition of the license.
11. If the developer does not agree to replace the facilities and replacement is appropriate, then in the 4(e) report, request FERC to require such replacement. In the 4(e) report, clearly show why replacement is important and in the public interest, and provide FERC with a draft license condition that they could use to require the replacement.
12. Determine what dispersed and other non-facility recreation uses and values are displaced by the project. Determine the appropriateness of the developer providing for those uses elsewhere, if those uses should be accommodated.
13. If the developer should provide for those uses, do the following: After analysis of the entire recreation situation and after discussions with the developer and other interested agencies and parties, provide FERC with a license (4(e)) condition that requires appropriate replacement of the displaced uses. This is usually done in relation to the recreation plan that the developer is to prepare as part of its license application.
14. If is not appropriate or possible for the developer to provide for the displaced uses, then this is simply a loss caused by the project. Weigh this loss in the overall balancing of the project and its impacts. It is conceivable that such a loss may make the project unacceptable. If so, you must convince FERC that the project is not in the public interest or that is inconsistent or would interfere with the purposes for which that National Forest was created or acquired (see FSH 2709.15 chapter 50).

15. In the analysis determine all the recreation needs in the area affected by the project.
16. If ALL the recreation needs in the area are induced by the presence of the project, its facilities, or operation then our 4(e) authority applies. After analysis of the entire recreation situation and after discussions with the developer and other interested agencies and parties, provide FERC with a license (4(e)) condition that requires appropriate recreation development. This is usually done in relation to the recreation plan that the developer is to prepare as part of its license application.
17. Determine what recreation needs are induced by things other than the project.
18. If ALL recreation needs are induced by the presence of the National Forest and its resources or other non project sources (none of the needs are induced by the project), then determine if those needs are in some way associated or related to the proposed hydropower project. Would the developer benefit by providing the recreation opportunities? Would project related facilities be useable in providing the facilities?; etc.
19. If the recreation needs are in some way associated with the project, then negotiate with the developer to provide the potentially project related recreation opportunities as resource enhancements.
20. If the developer agrees to provide the opportunities as an enhancement, then secure the agreement by making its provisions a 4(e) condition of the license.
21. If the developer does not agree to provide the enhancements then determine the appropriateness for the project to provide the enhancements and estimate the project's financial ability to provide for such opportunities.
22. If you determine that it is appropriate for the developer to provide the enhancements, then request FERC to require the developer to provide them as part of their license. In the 4(e) report, clearly show why the enhancement is important and in the public interest and provide FERC with a draft license condition that they could use to require the enhancement.
23. If it is not appropriate or reasonable for the developer to provide the enhancements or they are not reasonably related to the project, then the Forest Service is responsible for providing them or finding another way to provide them.
24. To reach this point, you are considering both project-induced and non-project-induced recreation needs. Negotiate with the developer to provide the non-project-induced needs as enhancements, similar to steps 18 through 23. Since not all the identified needs are the developer's responsibility, negotiations may involve tradeoffs with other recreation needs or other resources as appropriate. Clearly define who is responsible for what in this process. Balance the needs and responsibilities of both the Forest Service and developer.

25. If the developer agrees to provide the project-induced and non-project-induced opportunities, then secure the agreement by making its provisions a 4(e) condition of the license.

26. If the developer does not agree to provide for both the project induced needs and enhancements, then the 4(e) authority applies only to the project-induced needs. After analysis of the entire recreation situation and after discussions with the developer and other interested agencies and parties, provide FERC with a license (4(e)) condition that requires appropriate recreation development. This is usually done in relation to the recreation plan that the developer is to prepare as part of its license application. If you determine that it is appropriate for the developer also to provide the enhancements, then request FERC to require the developer to provide them as part of their license. In the 4(e) report, clearly show why the enhancement is important and in the public interest and provide FERC with a draft license condition that they could use to require the enhancement.

NON-FERC RESERVOIR PROJECTS

Federal reservoir developments are environmentally and socially similar to what is described in this document. However, the authorities are entirely different. The Forest Service would work with the Federal agency building the project (the Bureau of Reclamation or Corps of Engineers) to ensure adequate recreation facilities and accommodations are made.

Those agencies would have a Congressional authorization to construct the specific project with its dam and related facilities on National Forest System lands. Therefore, there is no particular authority that the Forest Service has over these agencies. However, as the agency responsible for managing the non-project uses of the land, the Forest Service has great influence and interagency agreements are normally easy to develop. It is important to note that Federal law requires that recreation facilities be developed at these facilities. In addition, each project's Congressional authorization usually includes direct reference to recreation development.

Non-Federal non-power reservoir developments (such as irrigation district reservoirs) are also environmentally and socially similar to what is described in this document. The authority is different from that regarding FERC projects. The Forest Service alone is responsible for authorizing the project and can determine directly what will be required of the developer.

One would seldom find any new irrigation reservoirs being developed today that don't develop hydroelectric power as a means to pay for the facilities for the water development. In fact, be suspicious that such a development might be trying to evade some regulations.

EXAMPLE PROJECT PROCESS

The following example project demonstrates the planning process that might be followed on a typical large hydropower development. The steps are consistent with those in the "Planning Steps" section above. This example is taken largely from a hydropower project in which all the reservoirs existed and a number of facilities existed. The project was being expanded which provided the opportunity to update the recreation plan and facilities. However, the expansion itself would not change the project-induced recreation needs, so our 4(e) authority did not apply. If it had been relicensing, the original license, or if the change had induced recreation needs, then our 4(e) authority would have applied. All the recreation upgrading that occurred was by agreement between the Forest Service and the licensee as ratified by FERC. If the Forest Service and licensee had disagreed, then FERC would have determined what the licensee should have done.

Recreation Needs

The process of determining needs had been taking place over a long period of time. It started with a Forest Service prepared basin-wide recreation plan that first considered all the recreation needs of the basin regardless of who might be responsible for it. It concluded years later with a complete recreation plan, using the original plan as a base and refining it based on additional information and details about user preferences and uses.

In the preparation for the original plan, recreators were interviewed and observations made of use patterns and impacts of recreation on other resources. Key observations were (1) that a number of users preferred undeveloped sites, (2) that a number of undeveloped sites were used by groups, year after year in a dense pattern, (3) that many existing campgrounds had high numbers of turn-away days, (4) that some users wanted secluded spots and some wanted sites with all the facilities, and (5) that many of the undeveloped sites were suffering resource damage and needed to be appropriately "hardened" to handle the use.

In this case, because the hydroelectric project was already built and attracting the public to the reservoirs, we had a good indication of significant unmet or unaccommodated demand. Interviews by the Forest Service and a consultant for the licensee added information about user preferences to the observations of use patterns.

No sites were being displaced by the proposed additions to the project. No recreation was being induced by the hydropower project additions. However, the original project had induced significant recreation pressure that was not adequately being handled. If the project was not being amended, we likely would have had to wait for relicensing of the project to have the licensee update the recreation facilities to handle the project induced needs.

A series of five reservoirs, large and small, along with a two-lane paved road that was plowed by the project in the winter, had created significant recreation opportunities that the public was taking advantage of. The number of lakes and differences in size and elevation created a wide diversity of opportunities and attractions. Each lake and even area of lake seemed to have attracted a different type of user.

Capability Assessment

The recreation opportunity spectrum (ROS) classes were developed in the original recreation plan and adjusted by the land management process and the information collected during the process of determining public needs and preferences for this project.

The area involved would be essentially the same as it existed during the planning phase since no new reservoirs were needed; the project was to build an additional powerhouse to more efficiently use the water. It was an amendment to an existing project. Since the developments added by this amendment did not induce or displace any recreation use, our 4(e) authority did not apply. The use that we sought to accommodate was induced by the original project which was still under license. In this case, we convinced the licensee and FERC that the recreation development was necessary and within the financial capability of the project to provide, considering the new revenues from the amendment addition.

Detailed mapping of the area affected by the hydropower project was provided by the licensee's consultant. This information was used to determine the ecological capabilities of the project; in other words, where potential recreation sites were.

Surveys of environmental capability, user preferences, and use patterns was used to refine the persons at one time (PAOT) limits for various areas. Ranges of PAOT where considered as alternatives were developed.

Alternatives were developed throughout the planning process. These alternatives considered such things as (1) how much protection (or hardening) to provide dispersed sites, (2) where to provide the desired experience opportunities, (3) PAOT limits, (4) facilities needed, (5) needs that may have been project induced and National Forest induced needs and displays showing different assumptions of what needs were induced, (6) full build-out versus triggered development, (7) who builds, pays, and operates.

The alternatives were analyzed in a open process of negotiation with the licensee.

Decision and Implementation

The plans keyed in on the users and accommodated their use within the ROS classes and PAOT limits appropriate to the types of use. Each lake and site were classified by the type of user it could best accommodate. For example:

Existing undeveloped sites were left largely undeveloped with just enough development to protect other resources. Access roads were gravelled and widely separated toilet and water facilities provided.

Some existing developed campgrounds were expanded and new campgrounds developed.

Winter recreation use was accommodated by providing parking and a warming hut at the trailhead of a number of cross-country skiing trails.

Concentrated group use areas were paved and nearby sanitary facilities were provided.

Extensive plans were made for future developments to be constructed if triggered by a certain number of turn-away days during the recreation season.

Some enhancements were negotiated to accommodate associated recreation use that was only partially project related, such as a campground for horseman at an equestrian trailhead at one of the lakes, and a wilderness trailhead parking lot at another.

By agreement with the licensee, the Forest Service provided the design for the facilities, while the licensee paid Forest Service costs of creating the design according to the plan. The licensee created the engineering drawing and contracted the construction. The licensee turned ownership of facilities over to the Forest Service who operates and maintains them at the licensee's expense. The licensee established an interest bearing fund to be used by the Forest Service for replacement of the facilities as they wear out.

The Forest Service monitored construction of the facilities as part of the special-use permit it issued to the licensee.

Follow-up

The Forest Service continues to monitor use and public needs relative to the project. The first additional phase has been triggered at one of the "developed lakes". Design is underway to build the first triggered facilities.

APPENDIX A - LITERATURE REVIEW

OVERVIEW

Providing recreation results in many benefits to society. Those benefits may include mental health, physical health, education and learning, environmental protection, economic development, and social interactions.

Many feel the government is responsible for providing recreation opportunities that require or are enhanced by resource settings.

A recreation experience is far more than camping in the woods. It consists of the entire process of anticipation, planning, travelling, participating, and returning (Schreyer 1979).

Planning and providing recreation consists of the following generalized steps:

1. Assess needs (measure demand or need)
2. Assess capability
 - a. resources, budgets, and technology
 - b. biological and social carrying capacity
 - c. potential conflicts with existing and future uses
3. Develop plan (alternatives to allocate resource)
4. Make decision (make allocation)
5. Implement decision (construct and operate)
6. Monitor demand, measure use, and update plan

This appendix will address general recreation planning to support the specific guidance for the Forest Service in recreation planning for water resource projects.

NEEDS ASSESSMENT (DEMAND)

Types of Demand

Recreation demand is the desire to fulfill a need or want and would better be considered as the desire for an outcome or experience, than just the action of going into the woods or going camping. Those actions are simply the vehicle to attain the desired outcome; other entirely different actions may also fill the same need. To make planning more manageable, types of opportunities for experiences that provide desired outcomes can be put in categories such as day-use, overnight camping, vacation camping, sightseeing, and simple driving escape from the city.

Demand is not static, it changes with any significant change in the factors listed below, particularly when the psychological or socioeconomic factors change because of economic changes, fads, or new information (advertisements).

Activities fulfill needs; activities could be grouped in the following categories to provide some related opportunities or preference types (Stankey 1977):

- | | |
|-----------------------|--|
| Appreciative Symbolic | - wilderness use, enjoyment of preservation |
| Extractive Symbolic | - hunting, fishing, wood gathering |
| Passive Free Play | - relaxing, sight seeing, photography |
| Social Learning | - nature study, group outings, socializing |
| Active Expressive | - water skiing, etc (not dependent on setting) |

Components of Demand

The components of an assessment of needs or a demand model are (Lier 1977, Knetsch 1974, and Ficht 1970):

Origin Factors

1. Population
2. Psychology as influenced by such as population density of locale, tastes, preferences, age
3. Socioeconomic influences such as spendable income, free time, cost, peer influence, cost effectiveness, and advertisements

Linkage Factors

4. Ease of attaining (distance to site and quality of transportation system)
5. alternative travel routes

Destination Factors

6. Attractions (including resource availability, peaking times, and seasonal uses)
7. Opportunities (including alternate activity types and combinations, and degree of activity dependance on a particular resource)
8. Capacity (biological and social)
9. Availability and cost of substitutes
10. Potential conflicts with other uses

The typical easy method of estimating demand is by measuring use, without considering the basis of the demand and, thereby, estimating whether the actual demand is being met by the use that is measured (Stankey 20). For example, if you have a campground that has a large number of recreation visitor days (RVDs) and experiences 45 turn-away days (a turn-away day is when one more visitor comes than can be accommodated) in a 100 day season, the logical conclusion is that another campground in that area is needed. But, how do you know that the overused facility is really what is desired? Maybe it is all that is available that is even close to what the real demand is after. If all the stores in an area offered only white bread, how could you say that since no one bought whole wheat, that there was no demand for whole wheat bread?

We must, therefore, be sure we are providing for the recreating public's wants and needs, rather than just more of the same opportunities, regardless of whether they fulfill true needs.

Origin Factors

Population bears directly on demand since obviously more people means more people will be seeking recreation opportunities. However, population figures by themselves are meaningless without the other factors mentioned above. For example, the growth of population in a socioeconomic group that does not use the National Forests for recreation would not affect demand for the National Forests. Therefore it is the populations of groups with similar characteristics that is important, not gross population.

The psychological aspects of recreation deal mostly with what motivates someone to seek an experience. Since this area is so complex I will defer it to a later section titled "Motivation".

In determining preferences of people in the complex area of recreation choice, the manager must remember that he must find out what the people want, not what he thinks they want. Without public input, no one can guess just what the potential user groups want (Stankey 20). What the manager would be doing is developing what s/he wants, or worse, what his or her view of what a segment of the population, of which s/he is not a member, wants.

The socioeconomic influences mix to some extent with motivation factors. Socioeconomic factors include such primary influences as spendable income and free time that affect lifestyle. It also includes social affects such as peer influence, social status, and the affects of advertising and knowledge gained about potential recreation opportunities. We will discuss more of this in the motivation section. Another influence on recreation choice is the cost effectiveness of the experience to the user.

Linkage Factors

Linkage factors pertain mostly to transportation from the home to the site for recreation. These factors will be discussed more in the "Capability" section on Transportation.

Destination Factors

These factors pertain to the attraction that draws the recreationist to the site to fulfill a need for a desirable outcome or experience. These factors include the attractions of the area and the opportunities provided by the area. These are affected by the social and biological carrying capacity of the area, the availability and price of substitutes for desired experience and other influences such as user conflicts (e.g. cross-country skiers and snowmobilers) and the extent to which the desired experience is dependent on a particular resource or setting. These factors will be discussed in more detail in the "Capability" section.

Motivation

What motivates people to desire some particular outcome or experience is as complicated as each individual's personality. People are the sum total of their basic abilities and experiences and no two are alike. Like opinions, just because they are different, does not necessarily mean that there is a right and wrong answer, need, or desire to be fulfilled. Trying to describe motivation in a practical, logical, manner is difficult because describing human behavior does not lend itself to logic. The best you can hope for is to describe what factors influence motivation and how they might influence motivation and hence recreation behavior.

As suggested before, outcomes are the products of recreation, not the activities themselves (Schreyer et.al. 1984). The activities such as relaxing in a beautiful wooded setting or meeting other campers are the vehicle to attain a desired outcome such as escape from work pressures or social interaction. To understand motives, separate the process of recreation behavior (why you do it and what you want or expect) from the context (the actual activity) (Schreyer et.al. 1984). Lumping these two aspects together will confuse or mask the real motives for recreation choices. Knowing the motive and the relationship of the other factors, you can estimate acceptable actions to fulfill the need. However, the converse is not true, you can not tell the motives from the actions since you cannot see what need is being fulfilled by a particular action. For example, the same hiking experience shared by 3 people may fulfill one persons need for adventure, another persons need for escape, and the others need for socializing in a small group.

One of the reasons why this area of recreation behavior is so complex is that it does not lend itself to analysis. There so are many factors that make up each individual's needs and basis for judgement, both conscious and subconscious, that you would never be able to accurately predict specific choices. In fact, because of subconscious involvement, most individuals would be hard-pressed to explain their choices, exactly.

The recreation opportunity spectrum (ROS) is a good and useful tool for inventorying, describing, and allocating the recreation resource. However, it needs to be meshed more with an inventory of outcome opportunities that display psychological rewards to more accurately plan and allocate the recreation resources (Schreyer et.al. 1984).

Each phase of the personal decision making process to choose a recreation destination or activity brings in new information and factors. A typical decision could begin with the questions (Schreyer et.el. 1984): (1) why recreate (what in my current environment and experience prompts me to need to recreate)? (2) what kind of recreation do I desire or would fulfill my need to recreate? (3) now that I know what to do, when can I do it? (4) now that I know what to do when, where would be the best place to go to do it? Each of these decision phases is influenced by habit, routine, knowledge, familiarity, and peer group.

The social context of the decision influences motivation (Schreyer et.al. 1984). The social context is an expression of the social background, status, and peer influence of the person making the choice. This social context influence can mask the motive and give seemingly inconsistent motive-choice relationships. Two seemingly identical people may choose two entirely different activities which may not seem to meet the need for recreation, simply because of the social influence on the decider. For example, based on an individual's needs and background, the logical choice is for the person to hike through a wilderness; but, because his social group goes to a group camp each year, the individual does that instead and receives no direct fulfillment of the observed need. The group activity, however, fulfills a different need that is also there but may have appeared to be secondary; that of social belonging.

Social mythology also affects choices (Schreyer et.al. 1984). For example, an individual convinced by someone trusted that s/he will love a certain experience, is likely to say that s/he enjoys the experience even though not very fulfilled by it.

Other social influences like fads and advertisements can influence choices. Convenience of the recreation setting also enters into the choice through such things as access, available time, money, and familiarity.

Essentially the process of choice follows the following order from (1) taking into account all the antecedent conditions and input to (2) determining a motive to (3) being acted on the cognitive state (what you know at the time) to (4) choosing an activity.

The cognitive state is a result of the experiences and the social influences (lifestyle, peers, and status) (Schreyer et.al. 1984). This cognitive state influence should not be underestimated. Often the fulfillment in recreation is social esteem and belonging to a chosen group. For example, one could say I am a _____ therefore I do _____ to relax and unwind. By such peer identification, the individual feels accepted and part of a group or lifestyle desired. This can be an extremely strong motivation; enough to override all other seemingly-logical choices. The recreation setting provided may not be as much an opportunity to engage in behavior to reach a typical outcome as it is facilitating generally socially acceptable modes of expression (Schreyer et.al. 1984). Social expression is, therefore, really an outcome.

What motivates some people this year may not motivate them next year. We must consider growth in motivation. This growth can be from new things learned from others, to things learned by experiences, or any number of other influences. As above, this is a change in the cognitive state. As experiences accumulate, particularly recreation experiences, the individual may begin to seek ever more novel or unique experiences.

A recreation engagement may consist of three parts: activities, settings, and companions (Williams 1984). A person whose most important aspect from the recreation experience is the activity, such as a mountain climber, could be called an activity specialist. As time progresses, that activity specialist's desires for the three components of the recreation experience will begin to separate and the activity portion will dominate the choice more and more. A mountain climbing activity specialist will begin to base the experience more and more on the harder climb, than on where it is (the setting) or on who it is with (companions). If substitution occurs, it takes place in the areas other than the area of specialization (activity in this example) (Williams 1984).

CAPABILITY ASSESSMENT

Factors of Capability

The primary factors to consider when determining the capability of an area include:

1. Resource base
2. Transportation system
3. Carrying capacity
4. Substitutions
5. Externalities

These areas of capability will be discussed in the following sections.

Resource Base

The Forest Service inventories its resource base of attractions and potential opportunities using the recreation opportunity spectrum (ROS). The attractions create the potential opportunities by what the land manager allows, encourages, or interferes with. In other words, the land has inherent characteristics that make it suitable for certain activities that yield potential outcomes. The manager can affect those uses by preventing or allowing conflicting uses, by informing the public of their availability, or by developing facilities to support or enhance the opportunities.

The inventory of the resource is tied to the needs of the public for various types of opportunities. Part of that linkage is that the manager needs to know the value of the various opportunities that might be provided. Some opportunities are based on "dependent satisfaction" (Stankey 1977). That means opportunity depends on the setting or resource in order to be fulfilled.

The need must also be translated into measurable opportunities. Factors affecting a basic breakdown of opportunity types might be (Silliman 1979):

1. Flat water recreation (lakes) versus flowing water recreation (streams).
2. The relevance of water to the recreation experience
 - a. water based
 - b. water enhanced
 - c. non-water related
3. Consider, also for example, the type of activity
 - a. preservation based (wilderness and similar areas)
 - b. passive recreation such as sight seeing
 - c. active recreation such as water skiing

The Forest Service uses the ROS system (Driver and Brown 1978, Brown et.al. 1978, Clark and Stankey 1979) to classify and manage the recreation resource. It uses the system for inventory and for management. Therefore, we use a capability inventory data set when planning and get an allocation map when the decisions is made.

The ROS system has three components which are integral parts of this multi-dimensional system. Those components are (1) activity opportunities (2) opportunities for settings in which activities occur, and (3) experience opportunities. Recreation opportunity is defined by Brown et.al. 1979 as: "the opportunity for a person to engage in a specific recreation activity within a specific environmental setting to realize a predictable recreation experience".

There is a danger in being too tied to the predictable portion of the definition. We are not capable of predicting all experience outcomes or activities that may take place in a particular setting, nor do we need to worry about such prediction. We need to be able to assure ourselves that predictable activities used to attain predictable outcomes are provided without limiting the opportunities for the public to invent their own activities and outcomes within the settings provided by the resource and its management

The ROS system contains a range of resource opportunities and assumes that in providing for the complete range of opportunities, we will provide adequate recreation availability to the public. This will be true as long as (1) we accurately assess the true needs of the public as discussed before, (2) we adequately allocate the recreation resource among the need categories and appropriately allow for other resource uses, and (3) we don't foreclose adjustment of the allocation to various opportunities as inevitable future demand changes occur.

The ROS system includes the following categories of opportunities listed in increasing order of non-development (Driver and Brown 1978, Brown et.al. 1978, Clark and Stankey 1979):

1. Urban
2. Semi-Urban
3. Roaded-Natural
4. Semi-Primitive Motorized
5. Semi-Primitive Non-Motorized
6. Primitive

The Forest Service will usually concentrate on the last four because that is what is expected in a Forest/wildland environment and because other land resources and land managers (Cities and Counties) provide for the first two settings. We must also know what other governmental bodies and private sources are providing, and not duplicate those on National Forests beyond the actual demand.

The Factors that affect capability within the ROS system are (Brown et.al. 1979):

1. potential experiences
2. supply and demand
 - a. existing supply of various opportunities
 - b. potential for additional supply
 - c. accurate demand measurements (actual demand not use measures)
3. inherent opportunities
4. suitability as measured by attractiveness and capacity
 - a. remoteness
 - b. size
 - c. evidence of man
 - d. resource modification
5. integration with other resources and uses
 - a. accommodate other resource needs in Forest Planning allocations
 - b. take into account tradeoffs, economics, multiple use, needs

The suitability assessment can be done by ranking the areas based on their capabilities and selecting the appropriate amount taking all other things into account. Areas may be capable of providing other experiences if they are modified by things such as roads being constructed or closed. Therefore, inventorying the potential ROS classifications needs to account for potential changes in land management. These opportunities for change need to be part of the data for planning.

Transportation System

Roads are a recreation facility. The recreation experience includes the trip to the recreation site and, in fact, just going for a ride in the woods is a primary recreation experience. Such road-recreation accounted for 23 percent of recreation experience, compared to 5 percent attributed to hiking (Dekalb 1979). Transportation systems can be an attraction when roads meet the desired recreation experience (paving versus 4-wheel drive roads). They can be designed for sight seeing. Plowing them in the winter for whatever purposes can create an attraction for snow play and viewing.

In determining transportation inventories and needs, consider the following (Reinke and Sullivan 1979):

1. road standards (primitive versus high speed)
2. weather needs
3. terrain
4. off highway vehicle use
5. dispersed parking
6. scenic routes and view areas
7. commodity traffic affects and bypass possibilities
8. road closures and area closures
9. private land conflicts
10. funding
11. jurisdiction (who performs and is responsible for maintenance)

Carrying Capacity

Carrying capacity is the amount and character of use that can be sustained in an area without causing excessive damage to the environment or to the experience of the visitor.

Carrying capacity is a function of the user/site interaction, both biological and social. The biological component determines how many people the area can accommodate without damage to the environment. It can be estimated by relating observations on other areas and the environmental impacts of that use level. It is most often a function of the soil and vegetation's ability to endure the impacts of use. It can be determined in a fairly straight-forward manner and must be monitored so that adjustments can be made as necessary. The environmental carrying capacity can be improved by planting species that can resist trampling damage and those that can protect the soil from erosion forces.

Social carrying capacity is much more difficult to quantify and relates directly to the experiences provided. Unlike biological carrying capacity which has a right answer for the limit of people, social carrying capacity will actually differentiate between opportunities provided in the ROS system. For example an area may have all the biological characteristics of a primitive opportunity, but without limiting the number of people using the area, it may be so heavily used so as to preclude the solitude that users may seek. The imposition of use limits carries its own affects on the recreation experience by denoting control by man and lack of individual freedom. Social carrying capacity is a tool to attain a desired recreation outcome or provide a potential recreation experience; it is not an inherent resource factor (Schreyer 1979). For that reason Schreyer prefers to call it "recreational use limitation".

There are a number of possibilities of affects that the presence of other recreation users may have on a person's recreation experience (Schreyer 1979):

1. No adverse affect caused by additional users
2. Adverse affect, but you can endure it since there are other reasons for being there
3. More users enhance the experience
4. More users drive you away from the site.

Limits on recreation users provides for a certain clientele (Schreyer 1979) or in other words, recognizing that to provide a certain potential experience, limits may be necessary. Potential and actual outcomes of recreation experiences (activities) are different for different people experiencing the same setting, either by different activities at the setting or by different fulfilled outcomes (Schreyer 1979). These psychological outcomes include excitement, relaxation, sensory stimulus, and socializing.

Limits imposed prefer one user over another, displacing the one not preferred. Like Judge Bork said at his confirmation hearings, rights cannot be granted; they can only be redistributed. For example, making murder illegal gives a right to the potential victim of murder, while taking away the freedom of the potential killer to do whatever s/he wants. In this case, and in many others, that redistribution of rights is essential and in the public interest. Many redistributions of recreation rights are not so black and white. When you take away a recreationist's opportunity by imposing a limit, you should be aware of this aspect (restriction) and provide for the displaced use elsewhere, if appropriate and consistent with National Forest management.

Not all limits exclude all but one user type; many compatible uses can take place in the same vicinity. Recognize that non-limitation is a form of allocation which excludes a clientele desiring a certain experience. While all worthy uses and a variety of settings should be provided by the resources of a National Forest, they all may not be permissible on the same acre of land.

The carrying capacity of the land should not be compromised in the futile attempt to provide for all the demand for recreation in some areas, particularly near major population centers. This may result in not meeting the actual demands for which you are trying to provide.

When comparing the limits imposed by the biological and social components, the social component is probably the hardest to determine and defend, but also likely to be the most important. User attitudes toward crowding determine the usefulness of the setting to meeting their needs. The user is likely to be more concerned by crowding and the manager more concerned by the potential environmental damage.

Crowding should be measured on a site specific basis. On the land, crowding is influenced by screening from topography and vegetation. On the water, it is mostly a function of acres per boat. However, topographic features of the shoreline and the type of boating also affect the perception of crowding. Test initial limits by site observations of crowding and environmental damage, and by surveys of user satisfaction. This monitoring is essential to proper recreation planning and management.

Carrying capacity can also be influenced by physical and mechanical limitations such as road access and access to an essential facility. For example, one political solution to the capacity arguments at Lake Tahoe is not widening highway 50, the main route from San Francisco and Sacramento. Sometimes on a large lake, the limitations of the boat ramps may preclude the launch of enough boats to cause overcrowding on the lake.

Substitutions

The concept of substitution works in recreation as it does in the store. If you are accustomed to buying a certain brand of beans and find that another brand is cheaper, you may try the other brand and if acceptable in taste, will probably change brands. So it is in recreation, there may be a certain level of over-crowding at a facility so, you build a new facility similar to the overused one. However, the County also builds a campground except this one is near town. Because of the increased convenience of the County facility, the National Forest facilities become underutilized. You might also accurately predict a certain demand, not being met in your area, but find out after providing for that use that the users prefer the convenience of the existing substitutes to the costs of directly fulfilling the need.

As discussed in the motivation section, substitutions must be made within parts of the recreation experience that are not essential to fulfilling the desired outcome. For example, a rock climber may be satisfied in a number of settings as long as the rock climbing can be accommodated. A socializer would only be happy with a substitute that provided other campers nearby to meet.

Externalities

Externalities (Stankey 1977) are outside factors affecting the recreation experience or affecting the allocation of recreation resources. These externalities may be simple multiple-use considerations. Just as the forest is more than trees, so National Forest land is more than recreation. These conflicting uses need to be accounted for in the allocation so that non-compatible uses are not forced to use the same resource. The non-commodity nature of recreation, needs to receive fair treatment in allocation for resources with commodity resources.

PLANNING

Planning assembles the previously mentioned information along with other necessary information on other resources to facilitate a decision among alternatives. Forest plans are currently used to allocate the resources. Master plans are often used to plan major facilities and/or the management of areas consistent with the decisions of the Forest plan. When facilities are involved in carrying out the master plan, site plans are used to layout and design the actual facilities.

We won't go into planning very deeply since recreation planning uses the same techniques as other planning in the Forest Service.

The specific aspects of recreation planning include (1) determining need for recreation opportunities, including public surveys and involvement; (2) inventorying the resource using the ROS system, with consideration for biological and social needs; (3) developing alternatives, (4) estimating impacts and consequences, and (5) selecting the preferred alternative. Once the plan is completed it is implemented monitored and adjusted as needed.

DECISION

The decision is never easy. To allow some uses will preclude others, while many uses are compatible with each other. While you cannot provide for every use on every acre, The National Forest can provide for most applicable uses.

Allocations can be made based on various approaches (Buhyoff and Leuscher 1980):

1. Resource approach - opportunities (a variety based on needs)
2. Activity approach - provide for historical uses
3. Economic approach - maximize income, including support facilities
4. Political approach - respond to political pressures
5. Behavioral approach - based on experiences provided

All are valid decision approaches. Alternatives can be developed using each of these approaches as a basis for a different alternative. The decision maker then can choose the approach which best meets the needs of the public.

The economics of the decision are an important aspect. Consider on the side of recreation, there is value in preservation, and in intangibles such as scenery (Vollmer 1979). In addition, many feel that the value of the land should not be counted as a cost of recreation development when determining a cost/benefit ratio (Vollmer 1979).

IMPLEMENTATION

Site Plans are developed to layout and design the actual recreation facilities. Design facilities to be functional, attractive, and consistent with the setting they are in. It is important that the users and operators be consulted to ensure a useful and manageable facility (Lederer 1979). The site plan is then implemented through construction of facilities.

Construction should be supervised and monitored. Use a special-use permit to control construction, by non-Forest Service entities, of recreation facilities.

MONITORING

Once facilities are constructed or dispersed sites established, it is important to monitor the use of those areas. It is also important to continue to survey public needs and perceptions, to ensure that you are providing the appropriate opportunities. Use this information to validate or adjust future plans.

NEED PROJECTIONS (FUTURE NEEDS)

It is very difficult to project needs for recreation very far into the future. This is because of the many factors making up demand and the difficulty of measuring some of these factors. Social changes and economic variations over time will affect demand in ways that cannot be predicted accurately. Resource bases also will change as time goes on. New substitutions will come onto the scene. There may have been some problems in the original demand estimates resulting from things such as measuring use and calling it demand, mistakes in determining motive by mixing motive with activities or settings; they are separate. There also may have been mixups by viewing activities as outcomes. For these reasons, it is essential that future needs be accommodated in a flexible manner.

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